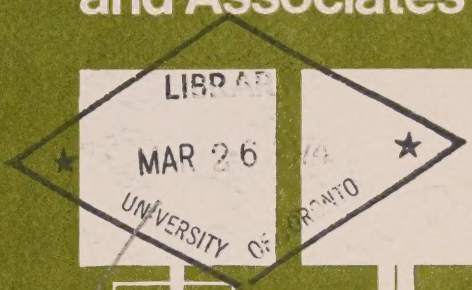
Residential Electrical Servicing

Report to The Ontario Housing Advisory Committee

Prepared by
Jack Chisvin
and Associates



RESIDENTIAL ELECTRICAL SERVICING

Report for:

Ontario Housing Advisory Committee

Prepared by:

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INDEX

SECTION 1

Relative Merits - Overhead versus Underground Hydro Installations and Plant Placement

Ontario Housing Advisory Committee
- Residential Electrical Servicing

SECTION 1

Relative Merits - Overhead versus Underground Hydro Installations and Plant Placement

Considered in the following comparisons are the following four conditions for electrical plant installation:

1 front lot placement - overhead

2 rear lot placement - overhead

3 front lot placement - underground, and

4 rear lot placement - underground.

General Commentary - Overhead versus Underground Distribution

Underground residential distribution (URD) offers the following general advantages, when compared with overhead distribution.

1 Improved Reliability of Service - This is due to the vulnerability of overhead distribution to ice storms, lightning strikes, wind damage and general weathering effects from relatively high exposure to the elements.

2 Improved Safety - Again considering the effects of storm damage, the hazard of downed lines is eliminated with underground distribution. This is not to say that there are not safety or security problems with URD systems; e.g.: restricting access to transformer units, etc. However, this type of security at least lends itself to control by vigilance and regular controlled checks by the utility maintenance personnel. By comparison, hazards created by storm damage are not generally

avoidable by routine maintenance checks, and require instantaneous, unscheduled response by maintenance crews, often during the night.

3 Full sectionalizing at all transformers, and primary selective loops, plus individual radial secondaries make for a more rapid location and isolation of URD faults, when compared with overhead circuiting.

4 There is an improvement in aesthetics with underground distribution.

5 Because of increased reliability of service it is believed that once a subdivision is completed, there is a reduction of unscheduled maintenance costs; however, this is difficult to verify without a specific time study being performed, as the utilities questioned do not break down their maintenance costs between scheduled versus unscheduled time, or time spent on overhead versus underground distribution.

Conversely, overhead distribution offers the following advantages when compared with underground distribution.

1 The biggest maintenance disadvantage with underground distribution is the problem of consumers digging into the underground cables. Obviously this can affect the reliability of service; however, from a safety aspect it is minimized due to the use of concentric neutral cables and multi-grounding. In practice this is a much greater problem with rear lot underground distribution than with front lot underground distribution.

2 Once located, faulted cable repairs are more readily effected with overhead distribution.

In comparing overhead with underground distribution, to be objective it is necessary to consider the plant location. Therefore a comparison of relative advantages of front versus rear lot plant placement is hereby included.

1 From an initial capital and maintenance costs aspect, front lot placement is less expensive; i.e.: front lot placement overhead is less expensive than rear lot placement overhead, and front lot placement underground is less expensive than rear lot placement underground.
(See Section 2 for further commentary in this regard)

Front lot placement offers the following advantages.

1 Access for maintenance is much improved; i.e.: due to bylaw restrictions and common practice, electrical plant is less affected by the installation of fences, trees and other garden improvements when located in the front lot placement condition.

2 There is less hazard with swimming pool installations when plant is located in the front lot: i.e.: interference with underground cables and/or transformer ground electrodes and groundrods is minimized with front lot location.

3 Rough and final grading costs are lower with front lot installation. (See Section 2 for estimates)

4 Allocation of specific housing styles to given lots is less restricted with front lot installed plant. This is because of the necessity to pregrade and establish final grade at an early stage of development with rear lot placement.

5 Because of the tendency in recent years to design developments with exterior houses backing onto peripheral arterial roads, there is a greater utilization of double-sided servicing (i.e.: where the houses are face-to-face) with front lot distribution than with rear lot distribution. In addition, there is a greater utilization of shared trenching with telephone, street lighting and cable television with front lot placement. (In certain areas where hydro plant is installed rear lot underground, Bell Canada will install their plant separately, front lot underground, thereby eliminating any shared costs benefit from joint usage of trenching).

6 Because of minimization of interference with fences, trees, etc. not only is access for maintenance improved with front lot placement but plant replacement is more readily accomplished and therefore capitalization costs are lower.

Commentary

When considering underground distribution there are distinct maintenance and capital cost advantages to locating electrical plant on-street or at front of lot.

In considering the merits of front versus rear lot placement for overhead distribution front lot placement offers the advantage of incorporating the street lighting into the pole line, and again offers best maintenance access. However, the improvement in maintenance access with overhead is minimum, and this is more than offset by the extremely poor aesthetics of secondary cables servicing homes on both sides of the street, and therefore creating an overhead network of cables across the actual roadway.

In addition, where overhead distribution is installed often Bell will install a rear lot pole line. This means that double pole lines are installed under such conditions with telephone and television cables entering overhead at the rear of houses and hydro entering overhead at the front of houses; therefore, not only is the visual clutter at a maximum, but the benefits of sharing the pole line for all services is lost.

Therefore, although it results in street lighting being handled separately, at an increase in cost, where overhead distribution is still installed it is usually rear lot placement, with joint use of pole line for all services (though on occasion Bell Canada will go front lot underground alone when hydro is rear lot overhead). Notwithstanding, on-street aesthetics are improved either way.

SECTION 2

Relative Costs - Overhead versus Underground Hydro Electric Installations

Overhead Residential Electrical Distribution

Minimum cost in residential distribution is overhead front lot placement. This is because on-street lighting can also be incorporated into the distribution pole line system. Notwithstanding, in many instances the telephone company is not willing to share on an overhead front lot pole line, and therefore this has to be considered when comparing relative costs.

Because of aesthetic considerations, front lot overhead distribution is not generally applied these days except in certain rural and semi-rural areas. A designed, supplied and installed front lot distribution system for an average density residential area, and including street lighting, can be purchased for approximately $275 to $300 per lot. (Note 1)

Rear lot totally overhead residential distribution systems can be installed for approximately the same cost as front lot distribution. However, an additional cost of approximately $115 per lot is required for installing separate on-street residential lighting, with underground circuits.

It should be noted that these rear lot estimates do not include the extra hidden costs when related to front lot distribution that the developer incurs for pregrading and final grading of the rear lot easements. This hidden charge can be estimated at approximately $150 per lot for extra pre-grading and final grading. This estimate assumes reasonable soil conditions and can be even higher when considering adverse natural terrain, or fall and winter installation times.

(Note 1: Figures stated throughout this report are relative costs only for non-electric heating and, in practice, will vary widely from one location to another.

Underground Residential Electrical Distribution

Generally, front lot underground residential distribution is less expensive than underground rear lot distribution, and has the advantage of improved maintenance access.

Designed, supplied and installed front lot URD plant generally costs in the order of $700 per lot, given standard density conditions, and a reasonable mix of semi-detached and detached homes. This estimate includes street lighting, and assumes shared trenching with the telephone and television services.

Underground residential distribution rear lot, generally costs from $20 to $40 more than front lot placement because of additional trenching for on-street lighting system, and due to the prevalent modern day practice of facing subdivisions inward with the exterior homes backing onto arterial roads, thereby resulting in a larger degree of single lot servicing with rear lot distribution.

Again, as in comparing front versus rear lot placement for overhead, these estimates do not include extra hidden costs for pregrading and final grading of lots for rear lot easements and these hidden charges are approximately $150 per lot.

An additional hidden charge with URD rear lot placement is the capitalization of replacement of the underground plant. This is higher with rear lot placement installations, because of the problems of digging up and replacing fences, trees, shrubs, gardens, etc. No actual costs could be obtained on this aspect; however, it would not be unreasonable to expect to spend an additional $50 per lot for restoration work in rear lot versus front lot locations.

Relative Maintenance Costs

Most utilities do not differentiate in their time keeping for underground and overhead distribution maintenance; therefore, it would be necessary to perform a detailed time study to establish relative maintenance costs. However, a number of utilities were sampled as to opinion of overhead maintenance versus underground maintenance.

Opinions varied, however the comments on maintenance noted in Section 1 of this report under General Commentary - Overhead verus Underground Distribution are pertinent.

SECTION 3

Examination of Standard Practice in Ontario

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Examination of Standard Practice in Ontario

An examination of standard practice as it relates to residential electrical servicing, and in particular examining the following aspects:

1 materials

2 design parameters

3 installation practices

indicates that whereas certain criteria of distribution have become standardized (particularly in overhead systems) there is much scope for expansion and development of standardization, particularly in underground residential distribution.

Some of the criteria where some degree of standardization has been achieved are the following.

1 Normally open loop distribution

2 Joint use of trenches for hydro, telephone and television, generally with randomlay (except 25kv)

3 Shielded load break elbows

4 Direct burial of cables -Further refinements of this standard could be effected.

5 Primary voltage levels (15 kv, 25 kv and 35 kv)

6 Overhead ACSR cable and standardization of much overhead hardware

7 Pad mounted transformers (ANSI standard C57. 12.25.1971) -Many utilities still specify their own auxiliary features over and above this standard, calling for custom production runs at manufacturer's plants.

Distribution criteria which could be standardized to a much greater extent include the following.

A Materials

1 Primary cable specifications

2 Secondary cable specifications

3 Cable conductor materials (copper or aluminum)

4 Transformer specifications -Notwithstanding ANSI standard for pad mount units: i.e.: some utilities use pad mounts, others use submersible units

5 Cable sizes (particularly secondary cables)

B Design Parameters

1 Transformer loadings

2 Primary cable loadings

3 Secondary cable loadings

4 Volt drop allowances in the secondary service entrance to distribution section - Whilst there is a CSA standard C235-1969 defining the limits in which voltage variations occur at service entrance points, actual volt drop allowances in the various components of the distribution system vary from utility to utility thereby resulting in varying limitations being given for the length of any given size of secondary service cable

5 Street lighting illumination levels and associated uniformity ratios and brightness levels

6 Street lighting hardware -Some standardization of materials and components could be effected without inhibiting individual subdivision aesthetic conditions.

C Installation Practices

1 Plant location (front lot or rear lot)

2 Cable installation conditions i.e.: whether cable should be

a) direct buried

b) installed in a direct buried duct, or

c) installed in a concrete encased duct

3 Service supply for apartments -Maximum loading at which utility will provide a secondary service, by means of an equipped vault or pad mount unit varies from 50 kva to unlimited load in certain instances. Some utilities require an apartment builder to accept high voltage primary service above 75 kva, whilst others will insist upon supplying secondary voltage regardless of load. The average demarcation limit at which most utilities will provide secondary voltage is around 300 kva maximum load.

4 Townhouses -The demarcation point varies from utility to utility. Generally, service supply falls in one of the following 3 categories:

a) The utility provides a primary voltage supply only to the lot line, with all transformation secondary plant, and distribution by the developer. Metering is bulk primary.

b) Secondary service at each townhouse meter socket, all plant by the utility.

c) Primary supply plus protection and vault type transformation by the utility, with secondary distribution only by the developer. Metering is generally bulk secondary.

The implications of all secondary distribution and/or transformation by developer means that all materials must be CSA approved and

4 (cont'd.)

installation must conform with the Ontario Hydro and Electric Safety Code. This method results generally in single point metering (i.e.: categories (a) or (c) above) for total development, and probably higher installation costs. Conversely the utilities save on costs for billing and metering with the 'bulk metered' systems.

General Commentary

Standardization in the areas listed above would effect savings in initial plant capital cost, and therefore capitalization of plant for replacement. To be effective such standardization should be on a province wide or national scale. In addition, standardizations mentioned in the 'materials' section above would, in fact, improve material deliveries, a perennial problem in the scheduling of new or replacement distribution systems.

To effect standardization in the areas listed above would require some central authority or body to perform studies in the areas indicated and to collate and analyze much existing information which is presently available with the individual utilities.

A -Detailed Commentary on Two Items for which Standardization could be Improved

1 Transformer Loadings

There is, at present, a wide discrepancy in load allowances from utility to utility company. The transformer thermal damage curve is a fixed characteristic, and ideally transformers should be loaded to obtain maximum performance without loss of life, within this defined limitation. It should therefore be possible to obtain recorded data for all

Transformer Loadings (cont'd.)

varying types of subdivisions and loads as to when peaks occur, the duration of such peaks, and the relative size of such peak loads.

If such data were collected and analyzed on a province wide basis then detailed analysis and documentation should result in optimum loadings being established. Such results could be issued with ambient adjustment factors, to make them effective for all areas of the Province. Also, as part of such a study, factors could be included to relate transformer costs to transformer life, to determine optimum economics as it relates to transformer overload and life.

2 Cable Specifications

IPCEA issue extremely complete, comprehensive specifications for all types of cables, yet most utilities have some variation or adaptation of these standard specifications, resulting in custom runs each time cable is ordered by any given utility, or developer working within that utility's system. Therefore, a worthwhile study would be to establish whether all utility company variations are unique, or determine if there is a pattern in specifying similar type custom features from one utility to another. Also, such a study should examine why these custom variations to IPCEA specifications are believed necessary, to again see if there is a pattern of logic. Perhaps from the utility's viewpoint IPCEA specifications are too general in nature, and designed to cover a wider application than just residential servicing. If so, it should be possible to establish standard cable specifications based on IPCEA, but with a set of standard amendments which would apply for utility distribution applications on a province wide basis.

Summary

These two examples (transformer loading and cable specifications) detailed above are examples of the type of standardization envisaged for the items previously listed.

Study and establishment of standards should be by some active authority or body with province wide terms of reference.
(See Section 6 for further commentary in this regard).

SECTION 4

Identification of Factors Contribution to Cost of Hydro Electric Installations

Ontario Housing Advisory Committee
- Residential Electrical Servicing

SECTION 4

Identification of Factors Contributing to Cost of Hydro Electric Installations

It is suggested that the following items contribute to the cost of residential hydro electrical servicings, and reference is made to Section 6 for recommendations regarding reduction in the costs contributed by these factors.

1 The large number of utilities in Ontario with individual autonomy of practice

2 The nonstandard aspects of distribution as defined in Section 3

3 Inflexible practice, based on obsolete standardization (i.e.: inflexibility to new methods and materials, etc.)

4 Placement of underground plant at rear lots (considering pregrading costs and capitalization of plant replacement)

5 In the case of large developments, and depending upon the utility, the incurred cost of future expansion of the initial development and the development of adjacent land.

SECTION 5

Capital funding for Residential Electrical Servicing

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Capital Funding for Residential Electrical Servicing

This is one of the more widely varying aspects of residential electrical servicing. Practice varies from utility to utility. Actual charges and methods of funding can be as follows, or may be a combination of the methods indicated.

A Initial Plant and Installation Costs

1 Can be at no cost to the developer

2 Can be at full cost to the developer

3 Can be at partial cost to the developer (based on the difference between overhead and underground plant)

Often, where URD is mandatory, fully installed plant costs, within the developed lands are charged to the developer. However, peripheral main road feeder circuits (which are usually overhead) are provided by the utility. Notwithstanding, if it becomes necessary or desirable to install such main circuits underground, then an additional charge is levied to the developer, based on the difference between overhead and underground.

B Methods of Funding Plant and Installation

The methods utilized for funding electrical plant supply and installation can be the following:

1 A levy based on frontage (dollars per linear foot)

2 A levy based on cost per foot

3 Charges based on actual utility costs to service

B (Cont'd.)

4 Charges based on partial costs (i.e.: a fixed percentage of actual or estimated costs)

5 Developer provides and finances a designed and installed plant to Utilities standards and requirements

6 Developer advances full estimated cost

7 A special power rate to consumer is applied for U.R.D. (extremely rare method - 2 known cases in U.S.A.)

8 Local improvement taxes

9 Levy to developer based on future increased plant capacity

Reference is made to Section 5 - Appendices of this report for detailed examples of how charges and funding methods are applied in three Utilities in Ontario. Different methods have been deliberately chosen in these examples for comparison purposes.

SECTION 6

General Recommendations With Respect to Optimizing Costs of Residential Electrical Servicing

SECTION 6

General Recommendations with Respect to Optimizing Costs of Residential Electrical Servicing

It is suggested that with attention to the following items there could be some optimization of residential electrical servicing costs.

1 Reduce the large amount of utilities with autonomy of practice by amalgamation or consolidation into fewer, larger, more efficient utility systems. (It is understood that this may be considered under Regional Government and this would appear to be a valid step).

2 Improve and upgrade the degree of standardization for materials, design parameters and installation practice. It is recognized that work in this area is being performed by the Association of Municipal Electrical Utilities (AMEU), however, many utilities ignore what standards are recommended by the AMEU, and it would appear desirable that the AMEU should have stronger terms of reference.

Alternatively, consideration could be given to the Provincial Government setting up or providing such a service (perhaps through a Division of Ontario Hydro) to again provide higher standardization in the areas listed.

In considering expanding the responsibility of the AMEU, or establishment of some other regulatory province-wide body, and in considering establishment of a greater degree of standardization, additional consideration should be given to having two levels of standardization. Level I being mandatory conditions for those aspects that can be

2 (cont'd.)

specifically defined and fixed, and Level 2 being recommendation type standards.

3 Establishment of a standard practice for methods of charging for subdivision servicing. (Note: not actual charges, but methods of charging).

4 Establishment of a common structuring of rates for Hydro consumption. (Note: again, not a standardization of actual rates, but rate structuring).

5 In establishing a standard practice for methods of charging for subdivision servicing, the cost of electrical plant capacity for future expansion and oversizing of plant to serve adjacent lands should be funded separately.

APPENDICES I, II, III
To SECTION 5 -

Capital Funding for
Residential Electrical
Servicing

These Appendices give
details of how three
utilities in Ontario
operate, and fund their
development.

APPENDIX I

Utility A

Location of Plant

Presently the Utility A's standard is for URD, with plant located at front of lot, on-street. Underground distribution in residential areas is mandatory per bylaw.

Specifically, this applies to all electrical plant on and within the residential streets and subarterial roads. However, overhead distribution is permitted for the main primary circuits located on the main arterial roads around the periphery of residential developments.

Notwithstanding, where such periphery main roads are widely spaced (e.g.: generally more than one mile apart), it is sometimes necessary to route main circuits through a development block, in which case such circuits must be installed underground.

In such instances, the cost of installing these main feeder circuits underground can reflect in a higher servicing cost per lot for the residential servicing. This is because the developer is required to pay the extra difference in cost for having those main feeders underground, versus overhead.

Funding

The same bylaw also made it mandatory for the developer to pay all hydro servicing costs for new developments.

Therefore, new plant and installation costs are at full cost to the developer, for the specific development being serviced.

Obtaining Hydro Servicing

The developer has a choice of two methods of obtaining hydro servicing.

A Method I

Design is performed by private consultants retained by the developer and responsible to the developer and the utility company. Under this system installation is performed by outside contractors retained by the developer with inspection and control by the developer's consultants and with additional inspection and approval by the utility; that is the developer provides the complete designed and installed plant to the utility company's standards and requirements. Under this system the developer advances the full estimated cost of the plant to the utility (or 10% advance with a letter of credit for the balance) which is refunded upon acceptance of the actual installed plant.

B Method 2

Under this method the developer will request of the utility servicing for a registered plan of subdivision. An agreement is signed between the utility company and the developer formalizing the request for service, and a levy is charged the developer by the utility. Design and actual installation is by the utility, or by subcontractors working directly for the utility. As design and installation develops, progress charges are made against the developer based on incurred costs for design, processing, materials, and installation charges. Sometimes, advance of full estimated costs is required, depending on the status of construction, registration and resale of the serviced lots.

Plant for Future Load Growth

Under the terms of the bylaw it was intially deemed that any costs incurred in installing new plants which were for future considerations (i.e.: system and feeder capacity for adjacent lands to the actual developments being serviced) should be borne by the utility company, and ultimately charged to the developer of the adjacent lands when such development occurs.

However, because of the scale of development that has subsequently occurred, these future consideration costs came to be very high to the extent that the utility was unable to finance under existing rate and financing structuring. Therefore, an amendment to the bylaw was enacted, in which it was deemed that all initial costs, including the future considerations, would be borne by the first developer. Then, when the adjacent lands are developed, the initial developer has the right to bill the other ultimate users of that initial plant, for reimbursement of his capital investment on the basis of proportional usage.

In such instances the Utility usually arbitrate for the cost apportioning. (See under Capital Funding Recommendations for further commentary in this regard).

Estimated Costs

Servicing of residential homes is usually in the order of $550 to $750 per lot. However, the developer's initial costs can run as high as $1,100 per lot, depending upon the impact of additional costs incurred for installing main circuits underground, and the considerations of future development of adjacent lands.

Townhouses

Whereas the Utility's preferred philosophy is to construct a vault for a given townhouse development, with bulk metering at the vault, and secondary distribution by the townhouse builder's electrical contractor; in most instances because of the unavailability of space for a hydro vault, the Utility will design, supply and service to the individual meter units located at each individual townhouse.

APPENDIX II

Utility B

Location of Plant

Underground distribution in residential areas is not mandatory by a municipal or hydro bylaw. However, although not legally mandatory, the standard subdivision agreement between the municipality and residential subdivision developer does call for underground residential distribution. Therefore, although not a direct option from the developer's point of view, the municipal council does have the right to opt for overhead distribution in, say, low cost residential housing developments. That is, the system is flexible enough to allow for minimal servicing costs for low cost housing development, at the municipal council's option, without processing a bylaw amendment.

Actual installation practices over the last five years indicate that in all instances underground residential distribution has been utilized for all residential developments; i.e.: during this time period there has been no utilization of the municipal council option to opt for overhead residential distribution.

The electrical supply bylaw requires that each developer pay the full cost for the design, supply and installation of electrical plant located within and servicing that development.

In addition, the bylaw requires each developer to pay $300 per acre, as a contribution towards the basic system plant required to supply the actual dedicated plant within the specific developments; i.e.: this bulk service charge would cover such items as:

1 substation design and construction

(cont'd....

Location of Plant (cont'd.)

2 main, peripheral arterial feeder circuits, and

3 capacity for future development.

Obtaining Hydro Servicing

It has been general policy for a developer to obtain residential servicing by request to the utility for servicing of a registered plan of subdivision.

Under this system an agreement is signed between the utility and the developer, formalizing the request for service and a deposit is required of the developer by the utility.

Design and installation is by the utility, or by subcontractors working directly for the utility. Costs to the developer are based on actual incurred costs for design, processing materials and installation charges, plus bulk service charge mentioned previously.

In addition, as a pilot test project this utility is presently allowing one developer to utilize private consultants and contractors to provide a complete URD development, in accordance with the utility's standards, and with inspection and approval by the utility. Under this system the developer is required to advance a nominal deposit, plus a letter of credit for the estimated value of the designed and installed plant. Ultimately the plant will be accepted into the utility system. Under the terms of the utility's electrical supply bylaw the supply and installation of plant for future load growth is covered under the $300 per acre bulk supply charge. Therefore, charges to developers for installed plant supplied on and servicing the developed plans does not include the costs for future servicing of adjacent lands or future load growth, unless it specifically pertains to that actual development.

Estimated Costs

Within the jurisdiction of Utility B servicing of residential homes using URD is in the order of $800 per lot.

APPENDIX III

Utility C

Location of Plant

The present standard calls for:

1 underground residential distribution systems located front lot, or

2 overhead residential distribution located rear lot, with underground dips at road crossings and on-street sections, as selected by the developer.

Residential Distribution Policy

It is present Utility C policy that:

1 underground residential distribution systems not be mandatory, and

2 no poles be located in on-street locations.

This means that developers are offered a choice of either underground residential distribution, or rear lot overhead distribution, with underground sections for street crossings and other on-street sections of feeder. In either case, the developer is required to pay the extra cost for either of these systems over and above 'standard distribution'. (Standard distribution being the theoretical condition of overhead on-street pole lines).

Funding

Therefore, considering the above, funding for new residential housing developments is effected in three ways.

Funding (cont'd.)

1 Revenue from power consumption

2 Issuance of debentures - This, of course, relates to rate revenues, and usually applies only for major plant expansion: e.g.: new substations.

3 Revenue generated from charges to developer for difference between standard front lot overhead distribution and rear lot partial overhead or underground residential distribution.

Obtaining Hydro Servicing

All design and construction of new plant is handled directly by utility personnel. A charge of $25 per house is applied for actual connection and energization of service. This is refunded to the developer or building when the ultimate home purchaser contracts with the utility for service and when the developer has paid outstanding hydro bills for that period between initial energization and permanent house occupancy.

Plant for Future Load Growth

Funding for future load growth is inherent in the funding methods defined above; i.e.: because of the rate of growth within the utility, to date, this utility has not been faced with an abnormal growth, or an abnormally large development with inherent major considerations for future expansion. Therefore, it is practical for revenue generated from hydro consumption, and associated debenture issues, to handle future considerations in plant expansion.

Estimated Costs

Charges to the developer are approximately as follows:

1 For underground residential distribution, including street lighting -

flat rate charge for difference between standard overhead distribution, and URD (Note I)	$250 per lot
street lighting charge (Note 2)	98 per lot
	$348 per lot

2 For rear lot overhead distribution with on-street sections underground, and with underground street lighting distribution -

charge for difference between standard overhead distribution and rear lot overhead with on-street sections underground	$115 per lot
street lighting charge (Note 2)	146 per lot
	$261 per lot

Note I: This figure is presently under review.

Note 2: These street lighting charges are estimated, and adjusted for actual final costs.